

# Modelling the use of different enforcement strategies to improve food safety

*Esther van Asselt\**

*Piet Sterrenburg, Sjoukje Osinga*

*\*RIKILT – Institute of Food Safety, Wageningen University and Research Centre, P.O. Box 230, 6700 AE Wageningen, the Netherlands, T: +31-317-480268, F: +31-317-417717, E: [esther.vanasselt@wur.nl](mailto:esther.vanasselt@wur.nl)*

*\*RIKILT – Institute of Food Safety, Wageningen University and Research Centre, P.O. Box 230, 6700 AE Wageningen, the Netherlands, T: +31-317-480268, F: +31-317-417717, E: [esther.vanasselt@wur.nl](mailto:esther.vanasselt@wur.nl)*

## Abstract

According to the General Food Law, food producers are responsible for the production of safe products. Safe in this regard is often interpreted as compliance to EU food safety legislation. The level of compliance between companies differs and can be improved by measures such as education or sanctions. In order to determine the effectiveness of various enforcement strategies on the level of compliance we developed a simulation tool using Agent Based Modelling (ABM) as a method. This ABM tool allows to simulate with actions and reactions between autonomous agents, yielding an emerging overall effect. This emerging effect will give valuable insight in how the overall behaviour of the system and the individual behaviour of agents mutually depend on each other. As a case study, we focused on the use of antibiotics within primary pig production. The agents in this case were defined as individual farmers and food safety inspectors. Two groups of farmers were indicated: a cooperative, law-abiding versus an egoistic, more fraudulent group of farmers. We looked at the effect of a bonus-malus system and the use of education on these two groups. The ABM approach visually demonstrated that social and financial stimuli are important factors influencing the level of compliance. Furthermore, a certain amount of law-abiding behaviour is needed in combination with a minimum number of food safety inspectors to achieve a pre-set level of compliance and therefore a certain level of food safety.